AFMS Technology Update

Paula Binns
Clinical Engineering Branch
5 Aug 04

U.S. AIR FORCE

Overview

- AFMS Clinical Engineering
- Medical Investment Equipment Program
- MEDLOG and DMLSS Data Quality
- Medical Devices and Information Security
- Deployable Medical Oxygen Systems
- Radio Frequency Identification / Unique Identification (RFID / UID)
- Picture Archiving and Communications Systems (PACS)

U.S. AIR FORCE

AFMS Clinical Engineering

- **Medical Technology Management Services**
  - Central Management of Capital Equipment Sustainment and Replacement Program
  - Maintain Medical Maintenance Policy
  - Develop WRM Provisioning Requirements
  - Medical Device Security Policy Recommendations
  - DoD MILCON Equipment Planning
  - Equipment Consulting Support to Bases, MAJCOMs, AFMESA
- **Digital Imaging and Picture Archiving and Communications (PACS) planning, acquisition, deployment, acceptance testing, & sustainment**
  - Field Support Office (FSO) Functions
  - FY02 – FY07 Deployment Plan
  - PACS Information Security; PACS C4ISP/CON/CTO
  - DINPACS II Contract Support

U.S. AIR FORCE

Medical Investment Equipment

- **Medical Investment Equipment Program**
  - Clinical Technology Review and Assessment (CLINTECH) Website https://afml.ft-detrick.af.mil/clintech/default.cfm
    - Web based, real time review, approval, tracking, and financial management
    - Significant improvement in requirement analysis and acquisition lead time
  - Planning and Programming based on Equipment Life Expectancy
    - Ranges from 5 to 12 years (some of the most expensive equipment has shortest life eg., CT – 5 years)
    - Adjustments made to account for cost and state-of-the-art equipment capability
    - Additions for Special Programs – DINPACS, Pharmacy Robotics, DMLSS Program, Identified real property
    - Initial Outfitting for MILCON Projects
  - Execution – Funding and Review/Approval Process are Separate
    - Clinical and Technical Reviews at Base, MAJCOM, and AFMS
    - Centralized Funding and Execution with Decentralized (MAJCOM) control
    - Process for $100-$250K equipment in accordance with Threshold Changes

U.S. AIR FORCE

Medical Investment Equipment

- **Medical Investment Equipment Program (cont.)**
  - Other Procurement Program Review—FY04/05 Spend Plan
    - FY04 Telephony funding proposal and out-year financing plan
    - Potential impact to AFMS Investment equipment life cycle management
  - FY06–FY11 Medical Equipment OP POM Development
    - Modernization vs. Sustainment
  - Digital Mammography & 3 Tesla MRI Technology Migration
    - Approved by SGROCC for FY06-FY11 deployment
    - Will compete in execution years with all modernization initiatives
    - Congressional funding proposal for Digital Mammography

U.S. AIR FORCE

Medical Investment Equipment

- **Sustainment vs. Modernization**
  - Sustainment is normal replacement
    - All requirements are reviewed by the appropriate AFSG clinical consultant. (AF Diagnostic Imaging and Radiotherapy Board reviews 90% of medical investment equipment requirements)
    - Funded from normal MAJCOM allocation of investment equipment funds
  - Modernization is addition of new capability
    - Requires validation by SG Requirements for Operational Capabilities Council (SGROCC)
    - Funded through Modernization Directorate beginning FY06
  - If FY06-FY11 POM submission is not fully funded, modernization requirements (including new initiatives) will compete directly for programmed sustainment dollars
- **Future Outlook**
  - After FY04 OP dollars are spent, AFMS has $49M in investment equipment exceeding life expectancy
  - FY05 funds are in jeopardy due to telephony and other modernization requirements
- **What should we do now?**
  - Make sure all equipment requirements are submitted
  - Make sure MEDLOG and DMLSS records accurately reflect acquisition cost/dates

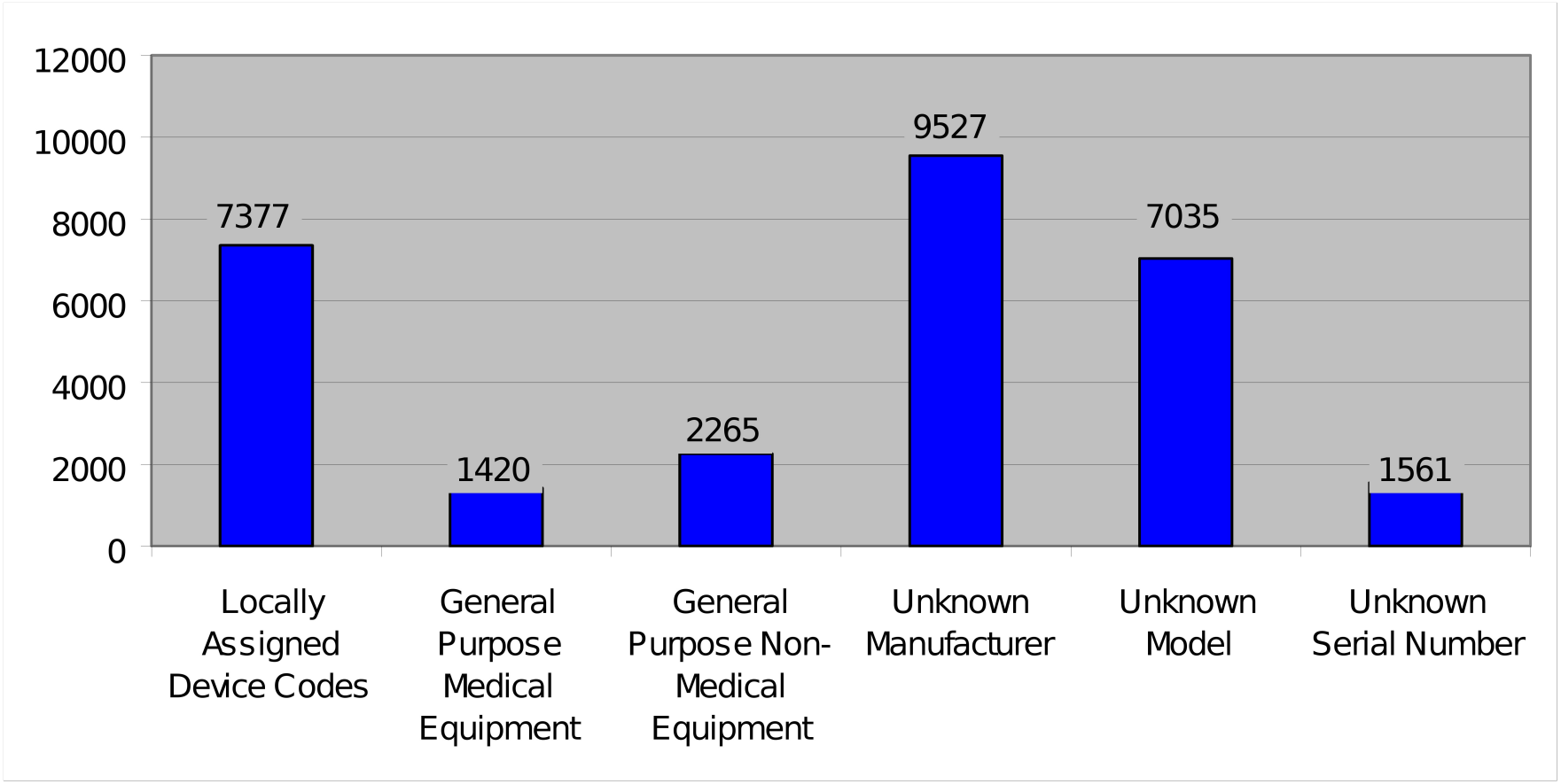
U.S. AIR FORCE

DMLSS and MEDLOG Data Quality

- **185,500 line items valued at over $1.03B**
- **Data quality / accuracy is a significant problem**
  - Errors in data entry
  - MEDLOG to DMLSS conversion creates some problems
  - Locally assigned device codes do not convert
  - General Purpose Medical and Non-Medical Equipment
  - Unknown or Missing Data for Manufacturers, Model, and Serial Numbers
  - Capital Equipment not entered according to CFO requirements
    - Master Record with total acquisition cost of complete system
    - Components loaded at zero cost
    - Compromises AFMS ability to program for sustainment
- **Efforts to improve DMLSS/MEDLOG Data**
  - Part of SGSL Strategic Plan
  - Must be combined effort of AFMSA/SGSLE, MAJCOMS, MTFs
  - SGSLE will be sending/calling MTFs with required corrections

U.S. AIR FORCE

DMLSS and MEDLOG Data Quality



U.S. AIR FORCE

Medical Device Information Security

- **FDA Regulated Medical Devices WILL be on the AF network**
  - Medical devices **CANNOT** be treated like normal IT devices (e.g. PCs, printers)
  - Modification of COTS Medical Devices to meet AF Security is not always possible
  - AFCERTS/OS Patches **MUST NOT** be installed without OEM testing and approval
    - If done, AF assumes all liability for device failure from the OEM
  - Emphasis must be on implementing medical technology to improve clinical outcomes and support patient care

- **Role of the DML and 4A2**
  - Get knowledgeable
  - Must be engaged on medical device/systems issues; input to, and control of the process
  - 4A2s MUST be engaged in networked/computerized medical devices
    - Planning, acquisition, installation and sustainment…it is NOT a role for the systems flight

- **The Future**
  - Army and VA have implemented an isolated medical device network segment
  - AF is working to implement same Defense-in-Depth strategy; timeline unknown
  - OEMs are beginning to understand and implement security measures in the device development process

U.S. AIR FORCE

Deployable Oxygen Systems

- **Current Issues**
  - Relied on LOX for last 15 years
    - Difficult to fill and maintain in the AOR
    - Large maintenance tail
  - Need to provide oxygen generation and storage to forward areas
  - Multiple components must be compatible
- **Current Storage Capabilities**
  - PTLOX (~ 923 units)
    - 10 Liter Liquid Oxygen Converter (LOX)
    - Maintained by 2A6 career field and CLS
    - Maintenance costs have dramatically increased
  - NPTLOX (30 units)
    - 20 Liter unit
    - Same sustainability issues as PTLOX
  - Cylinders – D,E and H
  - MOST (~100 units)
    - 10,000 Liter gaseous oxygen storage system
    - Designed to replace PTLOX
    - Currently awaiting final AE certification
    - First units purchase FY03 for ground UTCs supporting OIF

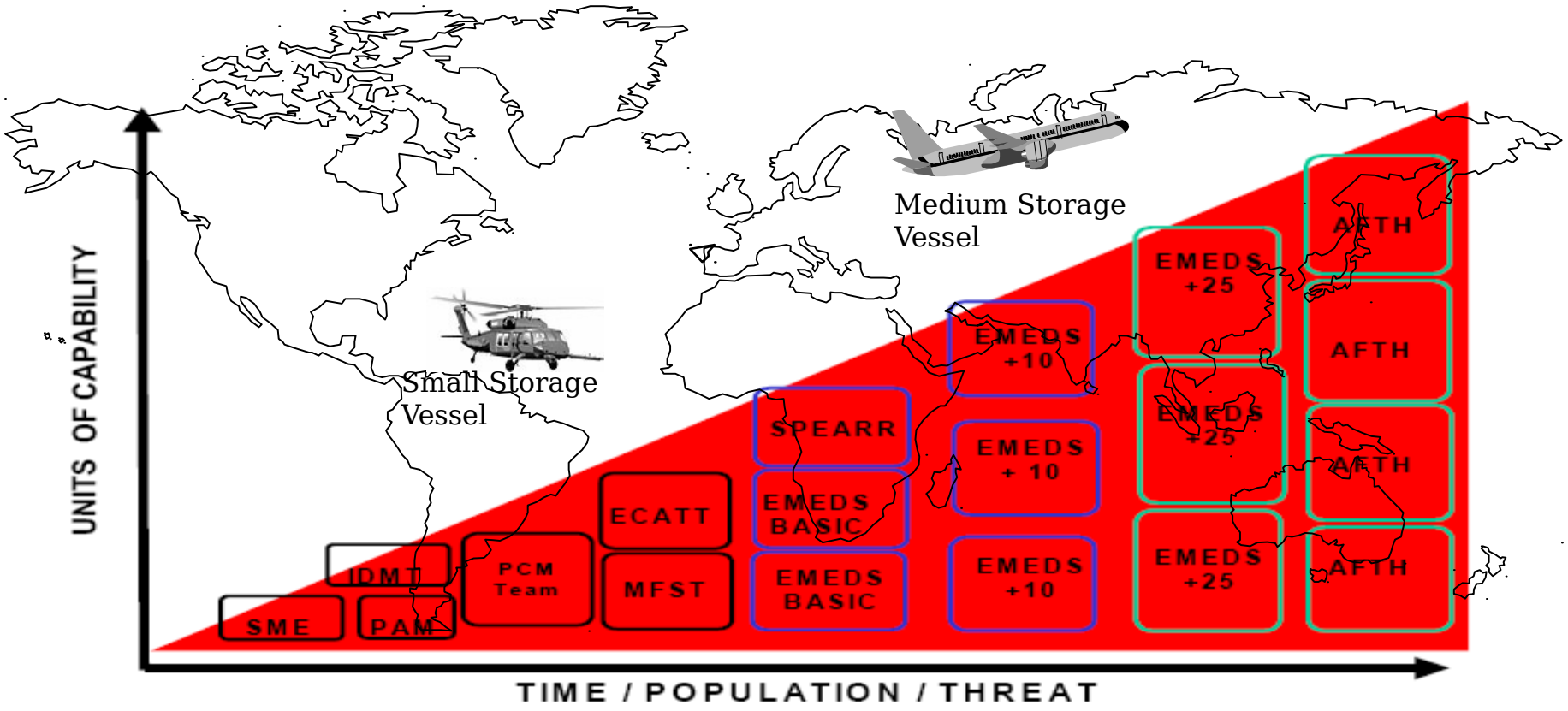
U.S. AIR FORCE

Deployable Oxygen Systems

- **Current Generation Capabilities**
  - EDOCS (29 units)
    - Large oxygen generator designed for EMEDS
      - 120 LPM, 93% USP, 90 psi output
      - Capable of delivering oxygen to patients at 60 to 120 LPM
      - Fills D,E, H and MOST cylinders at 60 LPM to 2,250 psi
  - MOGS
    - Joint AF/Army effort to find medium size concentrator
    - Multiple systems currently being tested
  - Oxlife (~100)
    - Personal concentrator designed for bedside use
    - 6 LPM, 5 psi, 93%USP output
- **Oxygen Website**
  - Developed to show full spectrum of oxygen support
  - https://afml.ft-detrick.af.mil/afmlo/applications/oxycentral
- **DOS Capabilities Development Document**
  - Requirements Document
  - 3-5 year plan – Analysis of Solutions ongoing

U.S. AIR FORCE

Deployable Oxygen Systems



Small Storage Vessel

Small Generator

Medium Storage Vessel

Medium Generator

Large Storage Vessel

Large Generator

U.S. AIR FORCE

RFID / UID

- **AFMS Strategic Plan**
- **Wide range of applications**
  - Supply Chain management
  - Life-cycle management
  - Asset tracking
  - Patient Safety
- **Pilot test at Kelly USA to identify changes needed in DMLSS**
  - Automate transactions
  - Improve data quality
  - Asset visibility regardless of location
- **New equipment will be required to have RFID/UID**
  - EDOCS MOST Contract
  - RFID Tag on box and equipment
  - UID number will be the same as EPC RFID Number
- **More info contact Steve Walker**

U.S. AIR FORCE

PACS and Teleradiology

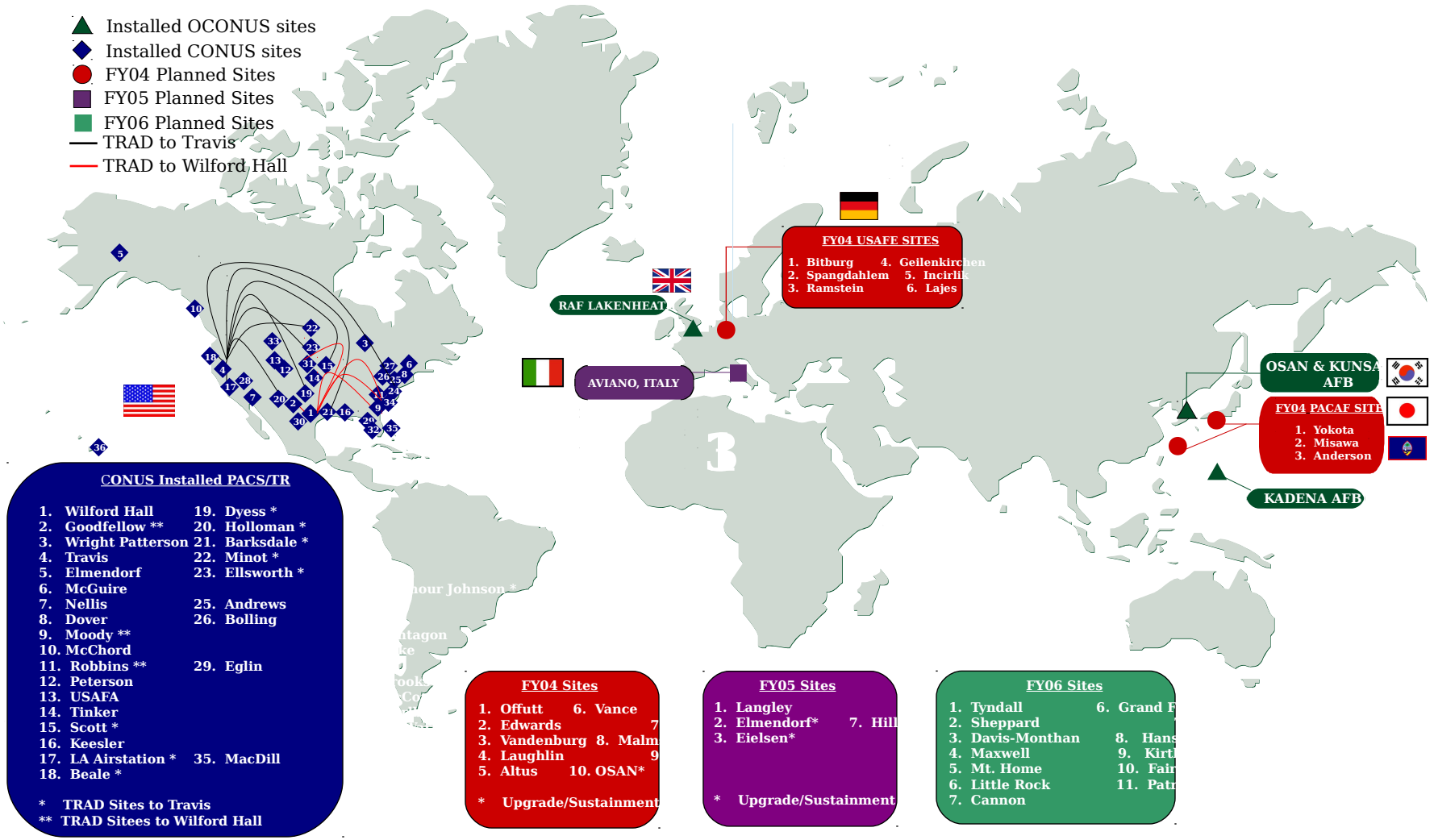
- **PACS**
  - Image Management System for Digital Imaging
  - Workstations, Image Archive, Image Distribution (within the facility), and connections to modalities
  - Provides the “backbone” for other Tele-ologies
- **Teleradiology**
  - Rules for image routing
  - Images acquired at one location can be read by a radiologist at another location
  - Requires robust Wide Area Network
  - DoD is a Challenge – Separate CHCS databases, firewalls, Network Security Issues

U.S. AIR FORCE

PACS and Teleradiology

- **The Facts**
  - Deployed to 65% of Air Force MTF's
  - 14 MTF's without Radiologists are sending exams to Wilford Hall and Travis at a savings of $3.9M/yr to the AFMS
  - Full deployment by the end of FY07
  - Helps mitigate Radiologist shortage – expected to continue for next 3-5 years
  - Currently Plain Film only; Looking at issues for CT, Ultrasound, and Mammography

USAF Global PACS and Teleradiology Deployment Status



CONUS Installed PACS/TR

1. Wilford Hall
2. Goodfellow **
3. Wright Patterson
4. Travis
5. Elmendorf
6. McGuire
7. Nellis
8. Dover
9. Moody **
10. McChord
11. Robbins **
12. Peterson
13. USAFA
14. Tinker
15. Scott *
16. Keesler
17. LA Airstation *
18. Beale *
19. Dyess *
20. Holloman *
21. Barksdale *
22. Minot *
23. Ellsworth *
25. Andrews
26. Bolling
29. Eglin
35. MacDill

* TRAD Sites to Travis
** TRAD Sitees to Wilford Hall

FY04 Sites

1. Offutt
2. Edwards
3. Vandenburg
4. Laughlin
5. Altus
6. Vance
7
8. Malm
9
10. OSAN*

* Upgrade/Sustainment

FY05 Sites

1. Langley
2. Elmendorf*
3. Eielsen*
7. Hill

* Upgrade/Sustainment

FY06 Sites

1. Tyndall
2. Sheppard
3. Davis-Monthan
4. Maxwell
5. Mt. Home
6. Little Rock
7. Cannon
6. Grand F
8. Hans
9. Kirt
10. Fair
11. Patr

TRAD FEATURES

- Integrated Encryption Engine
- Integrated Compression
- Integrated Webserver
- Integrated DICOM Workflow
- Virtual Reading Room
- Integrated Report Delivery
- Integrated CHCS Tunneling
- Integrated Broker Routing
- Integrated Output to Self Playing CD Devices and USB Drives
- Integrated with Existing PACS: AGFA, G.E.

U.S. AIR FORCE

PACS and Teleradiology

- **Current Challenges**
  - FSO Responsibilities and Resources (Funding and Personnel)
    - One stop shopping for PACS and teleradiology acquisition and support
  - Interface of PACS to CHCS (currently uni-directional)
    - Bi-Directional Interface and Voice Recognition
  - CON/CTO for All New DINPACS II Vendors
    - Current AF inventory limited to 2 vendors; one has complete CON
    - Expect this 2nd generation contract award by end of FY04
    - Minimum of 6 vendors on multi award contract
  - Virtual Radiology Environment
    - Seamless Integration of Patient Images and data across the entire AFMS
    - Integration with Electronic Patient Record (EPR)
    - CHCS II
    - Central versus Distributed Image Repository and Radiologists
  - 601 Audit Trail for Installed PACS

U.S. AIR FORCE

Points of Contact

- Mr. David Baker, Chief, Clinical Engineering
  - 301.619.7487
- CMSgt Richard Koleszar, 4A2 Career Field Manager
  - 301.619.4040
- Healthcare Technology Management
  - Ms. Paula Binns - 301.619.6046
  - Mr. Stephen Walker - 301.619.4039
  - Capt Lee Erickson - 301.619.7445
  - MSgt Daniel Hoffart - 301.619.8023
- AF PACS Deployment
  - Mr. Thomas Lewis – 301.619.4034
  - Maj Erich Murrell – 301.619.4120
  - Maj Sean Murphy – 301.619.6872
  - SMSgt Thomas Monroe - 301.619.4031
  - Mr. Steve Valentine - 301.619.6851
- Please e-mail any feedback, questions and concerns to:
  - sgsle@ft-detrick.af.mil

Questions ?